Table Motion

Circuit/Mechanical Descriptions

The following paragraphs describe the electrical and mechanical components that generate powered and power-assisted movement of the Table top, X-ray Arm, and Film Cassette.

Major Table Movement Components

Six components involved in most Table movements are described and depicted below.

Table Generator Interface

The Table Generator Interface (TGI) is a GE OEC-designed PCB that interfaces GE OEC controls, indicators, and other devices to the Table manufacturer's Table Motion PCB (also known as the Motron board). The TGI performs the following functions that relate to Table movement:

- Interfaces with the ARCNet LAN to decode Table movement commands generated by the Collimator Control Panel.
- Decodes Manchester-encoded Table movement commands generated by the Table Hand Control.
- Converts all decoded Table movement commands to Table manufacturer's proprietary interface, and communicates with Table Motion PCB using this interface.
- Decodes fiberoptic Table position and other information from the Table Motion PCB, and places this information on the ARCNet for display on the Collimator Control Panel VFD and X-ray Control Console VFD, and for use by the 1kx1k Workstation.

The TGI performs several other functions not related to Table movement that are described elsewhere in this manual.

The TGI is located inside the Tower's backpack. It is shown next.

Table Motion PCB

The Table Motion PCB is provided by the Table manufacturer. It controls all powered Table movement by performing the following tasks:

- Communicates directly with the Table Footswitch using Table manufacturer's proprietary interface
- Communicates with GE OEC Table motion controls through the GE OEC Table Generator Interface PCB.
- Supplies serial RS-485 control signals to the Frequency Inverters, which generate the three-phase power necessary to run motors M1 through M5.
- Generates drive signals for motor M6, which is responsible for Table lateral movement toward or away from the tower.
- Supplies enable signals to the Relay PCB, which provides power or braking current to M1, M2, M3, and M5, and power only to motor M4, which requires no brake.

The Table Motion PCB is also located inside the Tower. It is shown next.

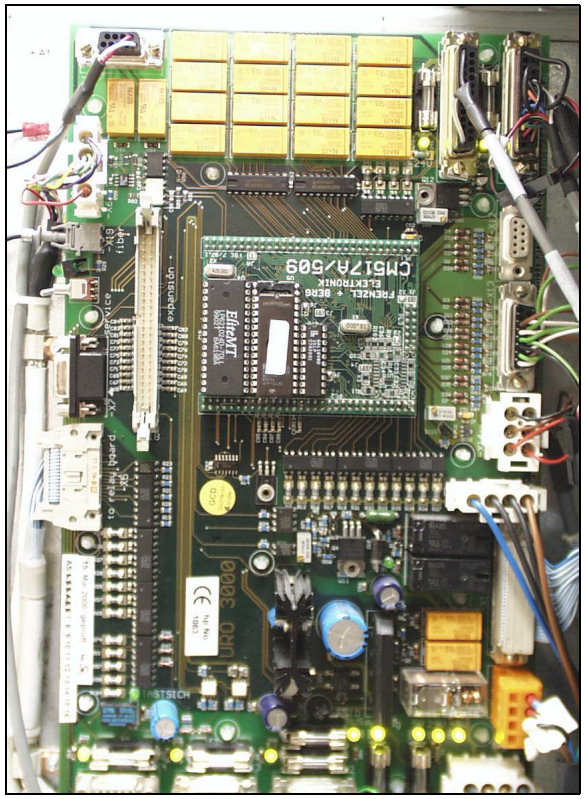


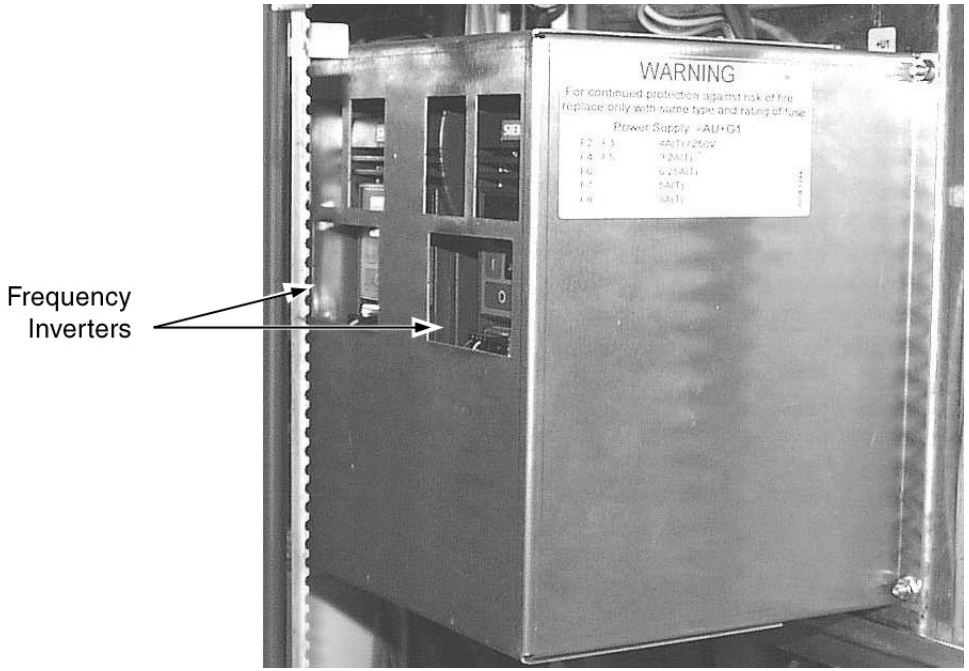
Table Motion PCB

Frequency Inverters

The two Frequency Inverters in the Uroview Table Subsystem perform similar tasks. Each converts single-phase AC power from the Table Power Supply to variable frequency, variable duty cycle, three-phase AC to run motors M1 through M5. Varying the duty cycle controls the starting and running torque of each motor. Varying the frequency controls motor speed. Each Frequency Inverter has the following additional features:

- Controlled by a serial RS-485 signal from the Table Motion PCB.
- Built-in DC injection brake with compound braking capability.

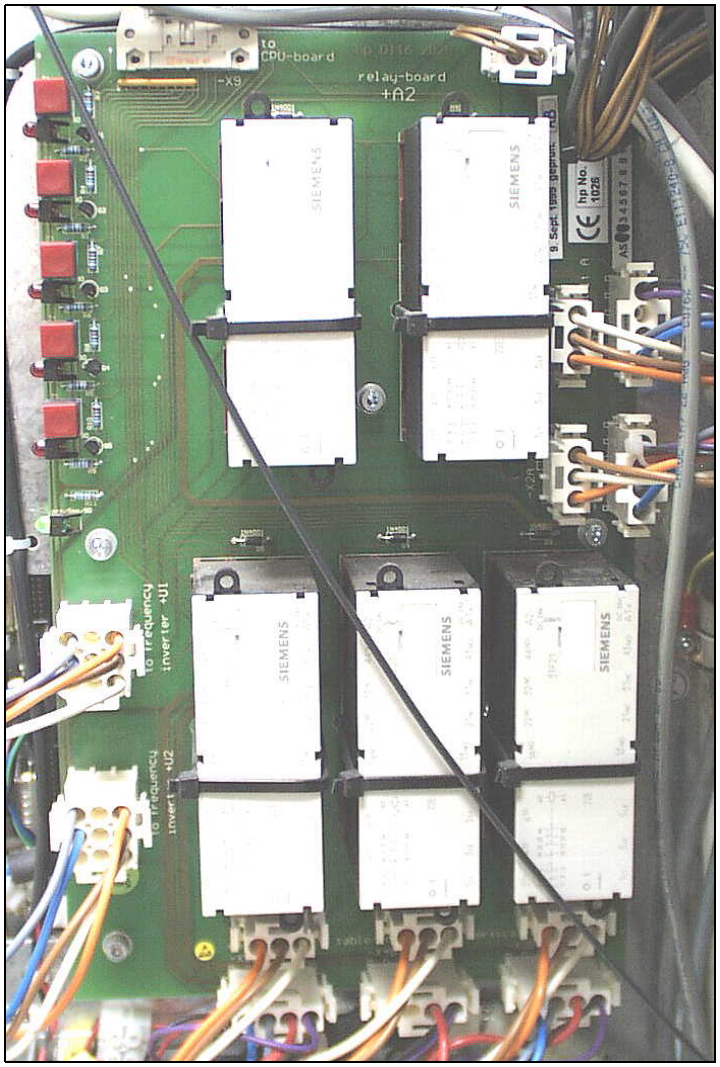
The Frequency Inverters are located in the Tower as shown in the following illustration.



Two Frequency Inverters Under a Single EMI Shield

Relay PCB

The Relay PCB applies three-phase power from the Frequency Inverters to the individual Table motors, and applies +24 Volts to operate the motor brakes. The Table Motion PCB controls the Relay PCB with enable signals to its individual relays. The Relay PCB is located in the Tower behind an EMI cover. It is shown in the following illustration.


to
CPU-board
-X9
relay-board
+A2
SIEMENS
SIEMENS
to frequency
inverter +U1
SIEMENS
SIEMENS
SIEMENS
to frequency
inverter +U2

Relay PCB

Table Digital PCB

The Table Digital PCB is primarily a passive component that serves as a junction point for signals associated with Table movement. It is quite small and is located underneath the covers on the bottom of the Table. The only active component on the Table Digital PCB is a relay. The following illustration shows the Table Digital PCB mounted to the underside of the Table. The following photo shows the Table Digital PCB.

Note: The photo is provided for identification purposes only. The photo shows the Fast Stop Cable disconnected with a jumper in place. This is not a normal configuration.

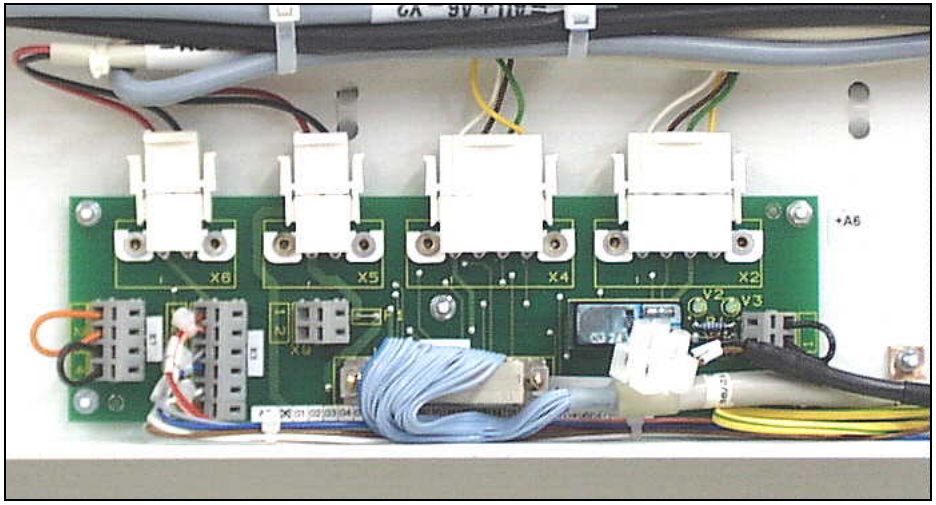


Table Digital PCB

Table Top Lateral Movement

The following block diagram shows the circuitry that moves the Table top toward or away from the Tower.

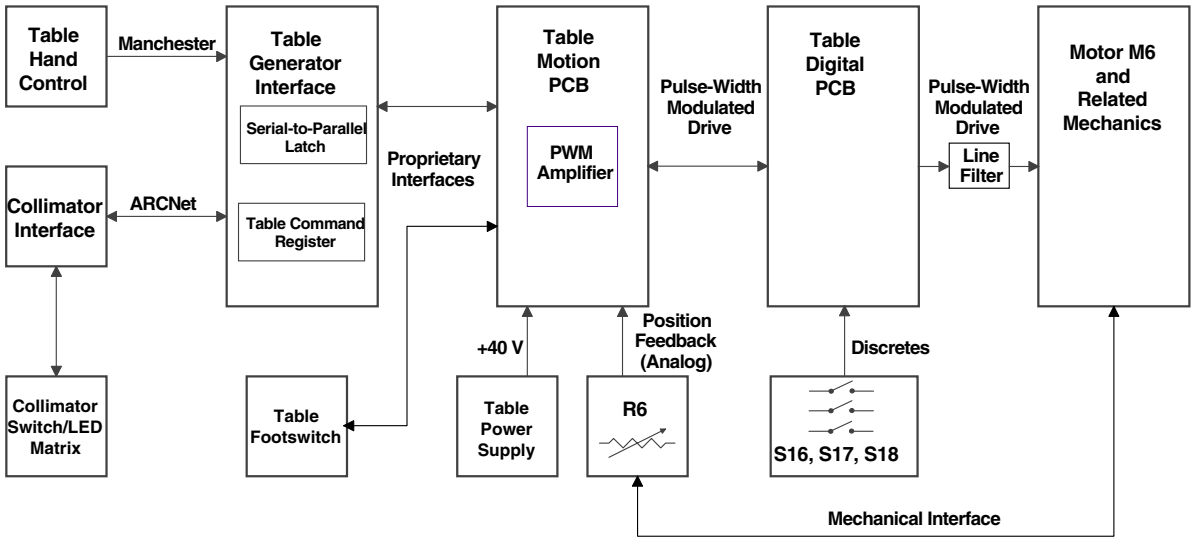


Table Top Lateral Movement Circuitry

You can initiate lateral movement of the Table top from the Table Hand Control, Collimator Control Panel, or Table Footswitch. The X-ray Control Console has no Table movement controls.

A Manchester serial encoder transmits button closure data from the Table Hand Control to the Table Generator Interface (TGI) PCB. The TGI has a Manchester decoder, which decodes and loads the serial data into a serial-to-parallel latch. The Table Motion PCB reads Table Hand Control data from this latch, and generates table motions in response to Hand Control button closures.

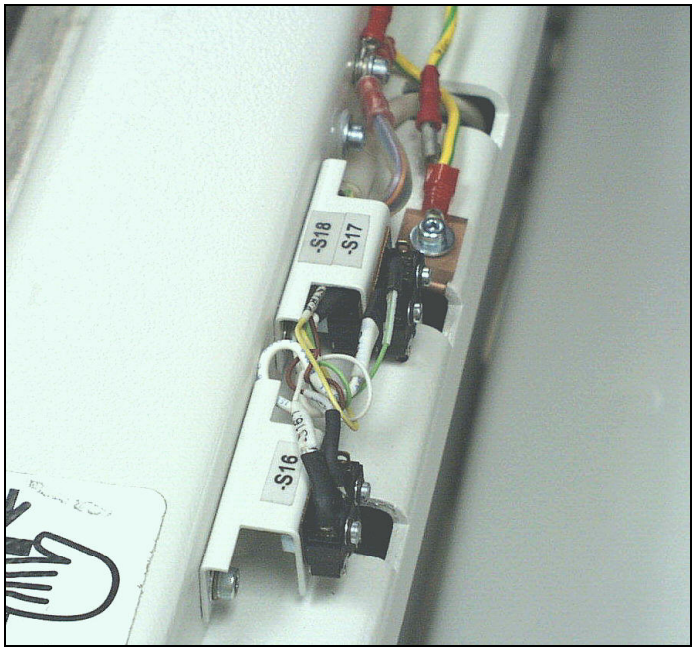
The Collimator Interface reads switch closures from and lights LEDs on the Collimator Control Panel switch matrix. It encodes the switch closure data and places the data on the ARCNet, where an ISA processor on the TGI reads it and places it in the Table Command Register. The TGI transmits data from the Table Command Register to the Table Motion PCB when the Table Motion PCB requests the data.

The Table Footswitch connects directly to the Table Motion CPU, and communicates with the Table CPU using the table manufacturer's proprietary serial interface.

The following illustration shows drive motor M6, located beneath the Table, which provides lateral worm gear drive for the Table. It accepts a pulse-width modulated drive signal from the Table Motion PCB through filter Z1. This PWM signal can drive the motor in either direction, providing total lateral Table top displacement of ±5.1 inches (±130 mm). R6, a multi-turn, gear-driven, linear potentiometer reports table position back to the Table Motion PCB. Although the pot is on the opposite side of the support rail, it is not visible in this photograph.

Lateral Motor M6 and Line Filter Z1

S16, S17, and S18, installed at the foot of the Table, detect any Table accessories installed in the Table rails. The Table prevents or limits lateral motion to avoid equipment collisions when certain accessories are installed.



S16, S17, and S18

Table Longitudinal Movement

The following block diagram shows the circuitry and electromechanical devices that produce head-to-foot and foot-to-head Table top movement.

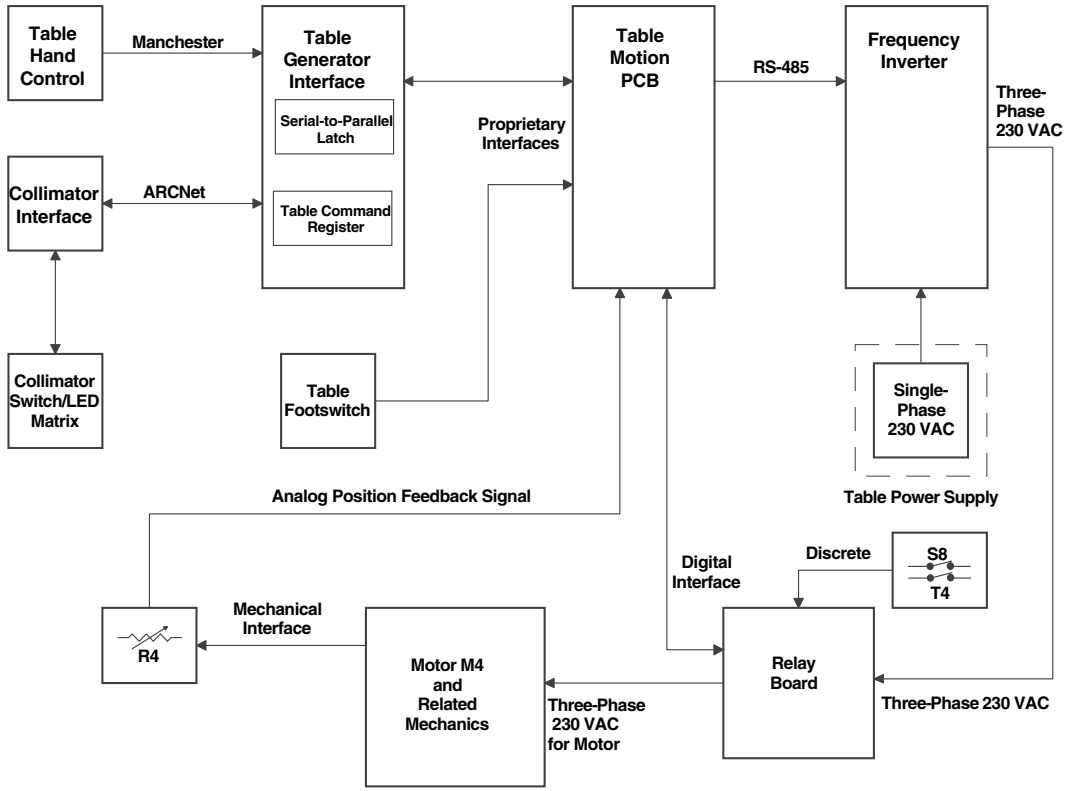


Table Top Longitudinal Movement Circuitry

You can initiate longitudinal movement of the Table top from the Table Hand Control, Collimator Control Panel, or Table Footswitch. There are no Table movement controls on the X-ray Control Console.

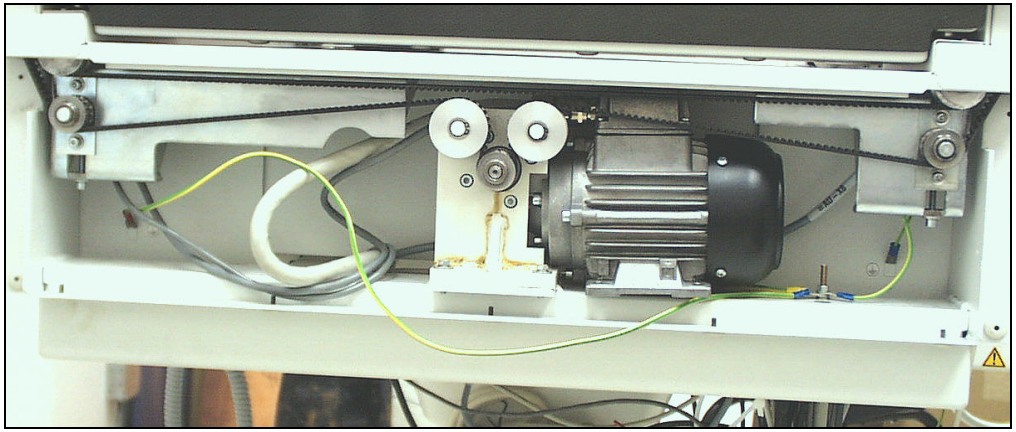
The Table Hand Control uses a Manchester serial encoder to transmit button closure data to the Table Generator Interface (TGI) PCB. The TGI has a Manchester decoder, which places the serial data in a serial-to-parallel latch. The Table Motion PCB reads Table Hand Control data from this latch and generates whatever table motions the Hand Control data specify.

The Collimator Interface decodes switch closures from and lights LEDs on the Collimator Control Panel switch matrix. The Collimator Interface encodes switch closure data and places the data on the ARCNet, where an ISA processor on the TGI reads it and places it in the Table Command Register. The TGI transmits these data to the Table Motion PCB upon its request.

The Table Footswitch connects directly to the Table Motion CPU, which decodes and acts on switch closure data.

The Frequency Inverter shown in the block diagram converts single-phase 230 VAC from the Table Power Supply to variable duty cycle, variable frequency, three-phase 230 VAC. This three-phase power runs motor M4, which generates longitudinal movement of the Table top.

Motor operation occurs under control of the Table Motion PCB, which controls the Frequency Inverter's output through the RS-485 interface shown in the block diagram, and generates contact closures on the Relay Board that switch power signals to the motor. The following illustration shows the longitudinal drive motor and associated components mounted at the head end of a right-hand table. These components are normally out of sight under equipment covers.



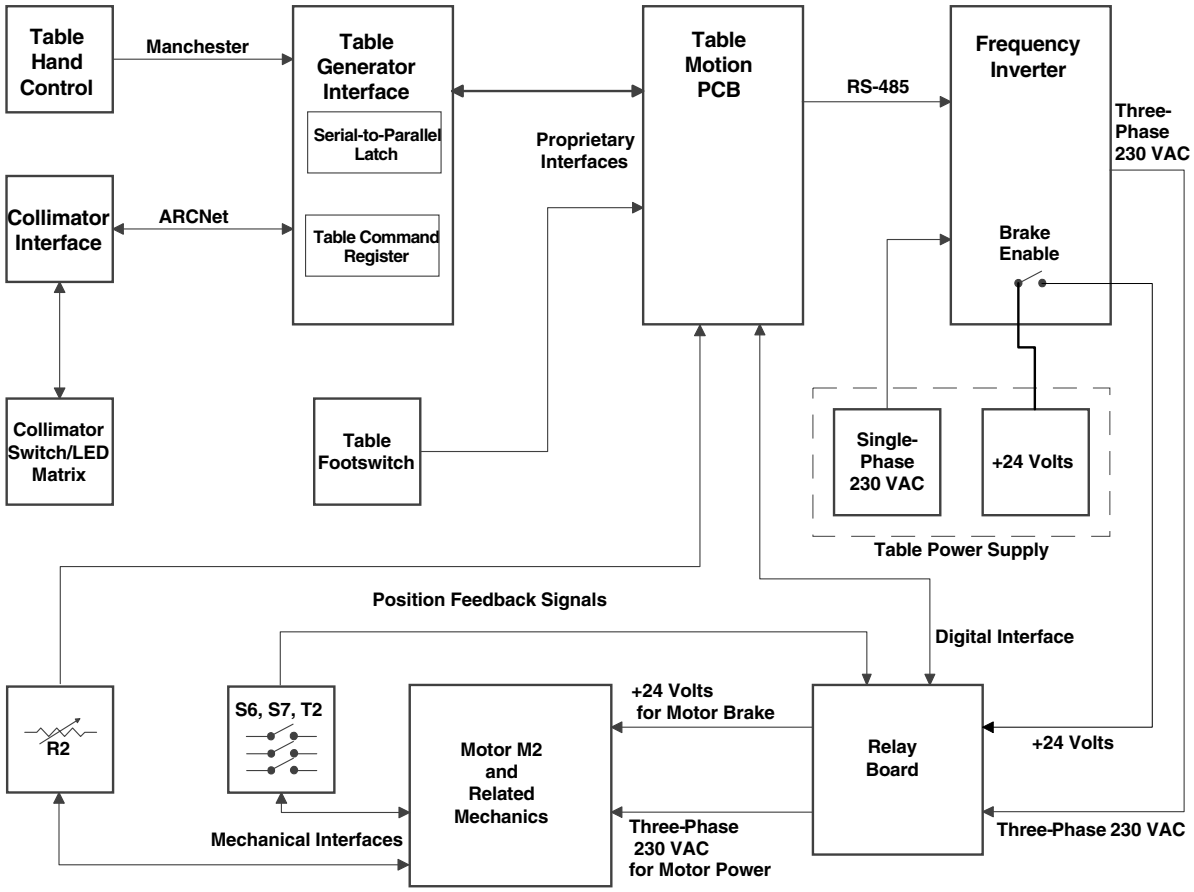
Longitudinal Drive Motor M4 and Associated Drive Mechanics

Longitudinal position pot R4 and limit switch S8 are located under the Table top on the patient's left-hand side. R4 provides continuous position feedback to the Table Motion PCB, which enables the Table Motion PCB to control speed and direction of Table top movement. S8 is wired in series with T4, a thermal switch mounted inside motor M4. This circuit halts Table top motion if the Table top moves out of its calibrated range or if M4 gets too hot.

Longitudinal Table Top Position Pot R4 and Limit Switch S8

X-ray Arm Longitudinal Movement

The following block diagram shows the circuitry and mechanical devices involved in head-to-foot and foot-to-head movement of the X-ray Arm , while the Table top remains stationary. Longitudinal movement of the Table top is described elsewhere in this chapter.



X-ray Arm Longitudinal Movement Circuitry

Use the Table Hand Control, Collimator Control Panel, or Table Footswitch to move the X-ray Arm longitudinally (table head-to-foot or foot-to-head) over a stationary Table. There are no Table movement controls on the X-ray Control Console.

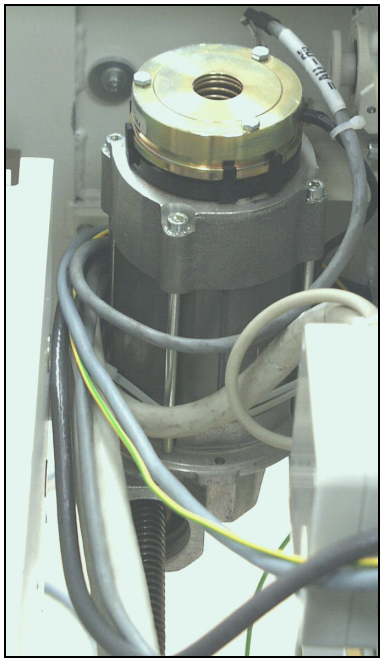
The Table Hand Control uses a Manchester serial encoder to transmit button closure data to the Table Generator Interface (TGI) PCB. The TGI has a Manchester decoder, which places the serial data in a serial-to-parallel latch. The Table Motion PCB reads Table Hand Control data from this latch and generates whatever table motions the Hand Control data specify.

The Collimator Interface decodes switch closures and lights LEDs on the Collimator Control Panel switch matrix. The Collimator Interface encodes switch closure data and places the data on the ARCNet, where an ISA processor on the TGI reads it and places it in the Table Command Register. The TGI transmits these data to the Table Motion PCB upon its request.

The Table Footswitch connects directly to the Table Motion CPU, which decodes and processes switch closure data.

The Frequency Inverter shown on the block diagram converts single-phase 230 VAC from the Table Power Supply to three-phase 230 VAC. The Frequency Inverter modulates both the output frequency and pulse width of each phase, enabling control of motor shaft rotation direction, speed, and torque. This three-phase power runs M2, which is the motor responsible for longitudinal movement of the X-ray Arm. Motor movement and braking occur under control of the Table Motion PCB, which communicates with the Frequency Inverter over the RS-485 interface shown in the block diagram.

Control signals from Table Motion PCB generate contact closures on the Relay Board that switch three-phase, 230 VAC power or the +24-Volt braking signal to motor M2 and its associated DC injection brake. The drive motor and associated components are located under equipment covers on the Tower side of the table. The following illustration shows drive Motor M2. Note that M2 has a right-angle gear assembly that permits it to push against a stationary horizontal worm gear, moving the X-ray Arm toward the head or foot end of the Table.

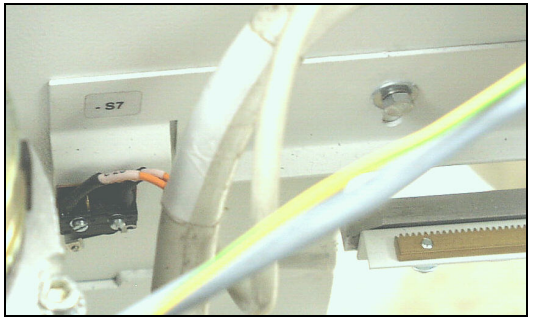


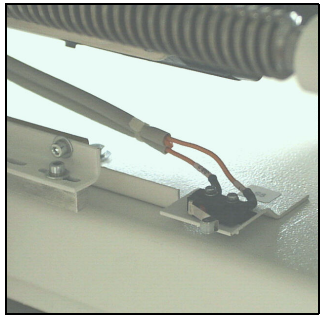
X-ray Arm Longitudinal Drive Motor M2

Potentiometer R2 reports X-ray Arm longitudinal position data back to the Table Motion CPU. R2 is located near drive motor M2 as shown in the following illustration.

X-ray Arm Longitudinal Movement Pot R2

Limit switches S7 and S6 are wired in series with thermal switch T2. S7 and S6 are located along the same axis as R2, as shown in the following pictures. T2 is located in motor M2. These devices prevent longitudinal movement of the X-ray Arm when motor M2 overheats or when the X-ray Arm moves beyond calibrated limits.

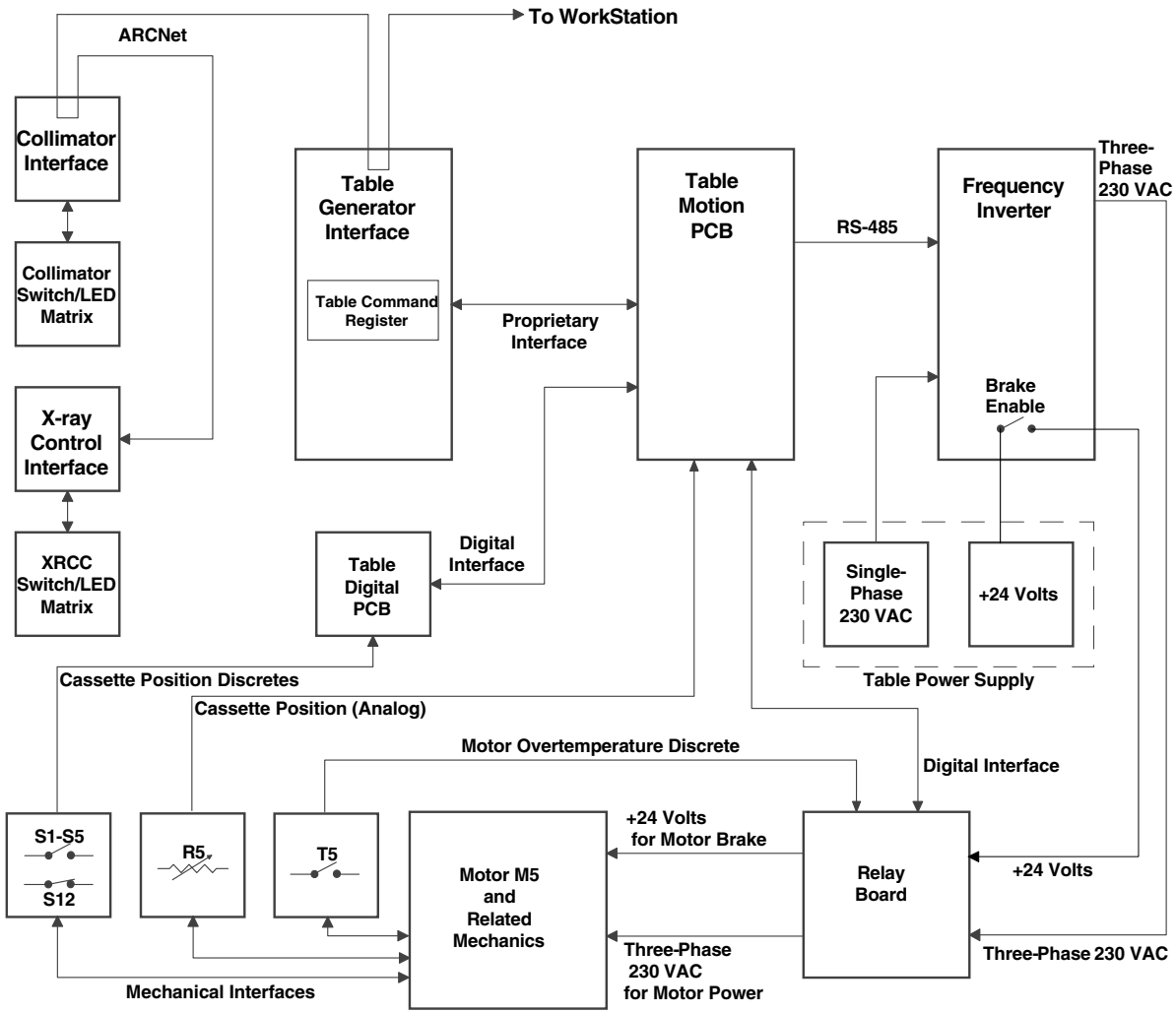




Limit Switches S7 (left) and S6 (right)

Film Cassette Longitudinal Movement

The following block diagram shows the circuitry and mechanical devices that together produce longitudinal movement of the Film cassette prior to and after a radiographic exposure. Film cassette movement between the "load" position by the cassette slot and the "shoot" position over the Image Intensifier are automatic events that occur in response to operator actions and other inputs to the Table Motion PCB.



Film Cassette Longitudinal Movement Circuitry

When the Uroview system powers up and initializes in Fluoro mode, software positions the film cassette carrier behind the cassette loading slot in the front of the Table. The film cassette carrier can be empty or be loaded with a film cassette during Fluoro mode. A sheet of lead above the Film cassette protects any film that might be present in the cassette during Fluoro procedures.

Film Cassette Slot

The first step in producing a radiographic image is to load the film cassette with film and place the cassette into the Table's cassette carrier. Consult the Operator manual if you are unsure how to do this.

When you load the cassette into the carrier, the cassette closes some normally-open microswitches beneath the cassette (S1-S5 in the diagram), notifying the Table Motion PCB (through the Table Digital PCB) that a film cassette of a certain size is present and locked in the carrier. Armed with this information, the Table Motion PCB can initiate the Film mode and move the film cassette into position under the X-ray tube upon operator command.

WARNING! Film carrier movement is powerful, fast, and dangerous. Stay clear of the film carrier at all times when servicing the Table with the film carrier exposed and power applied to the Table. Turn off all power when working on film carrier components or other components nearby. Failure to heed this warning may result in serious personal injury or equipment damage.

Once you load the Film cassette into the cassette carrier, press the Film button on the Collimator Control Panel or X-ray Control Console to initiate the Film mode. The LED next to Film button lights, indicating the Film mode is active.

When you press the Film button, the cassette carrier bearing the loaded film cassette moves SWIFTLY into position over the Image Intensifier. When the cassette carrier reaches its operating position over the Image Intensifier, normally-closed limit switch S12 mounted on the cassette carrier opens. This tells the Table Motion PCB (through the Table Digital PCB) that the film cassette is in operating position. Potentiometer R5 provides current cassette carrier position information to the Table Motion PCB.

Limit Switch S12

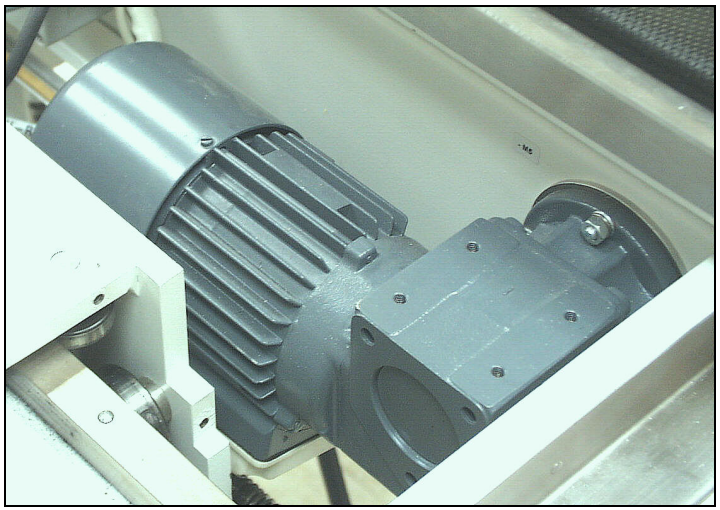
Multi-Turn Potentiometer R5

With the Film Cassette in position over the Image Intensifier and under the collimated X-ray beam, you have 60 seconds to make an X-ray image on the film. Use the X-ray Footswitch to make the exposure. Consult the operator manual for details if necessary.

Motor M5 derives its operating power from single-phase 230 VAC and 24 VDC provided by the Table Power Supply PCB. The Frequency Inverter converts the AC power to DC initially, and then converts the DC to variable-frequency, variable-duty-cycle, three-phase AC to drive the motor. A relay inside the Frequency Inverter switches +24-Volt injection braking current to the motor when three-phase AC isn't being applied.

The Table Motion PCB controls operation of Motor M5. It uses an RS-485 control line to the Frequency Inverter to select the frequency and duty cycle of three-phase AC that drives the motor. It also uses a proprietary digital interface to operate the Relay PCB, which switches drive power to the motor at the correct time, or DC injection braking power to the motor to stop it quickly. T5 is a thermal switch that protects M5 from overtemperature conditions.

The Table Motion PCB commands the Film Cassette carrier to return to its position behind the Film Cassette slot in the Table when you terminate the Film mode or Film mode times out.



Motor M5

Table Vertical Movement and Tilt

The following block diagram shows the circuitry that tilts the Table and moves it up and down.

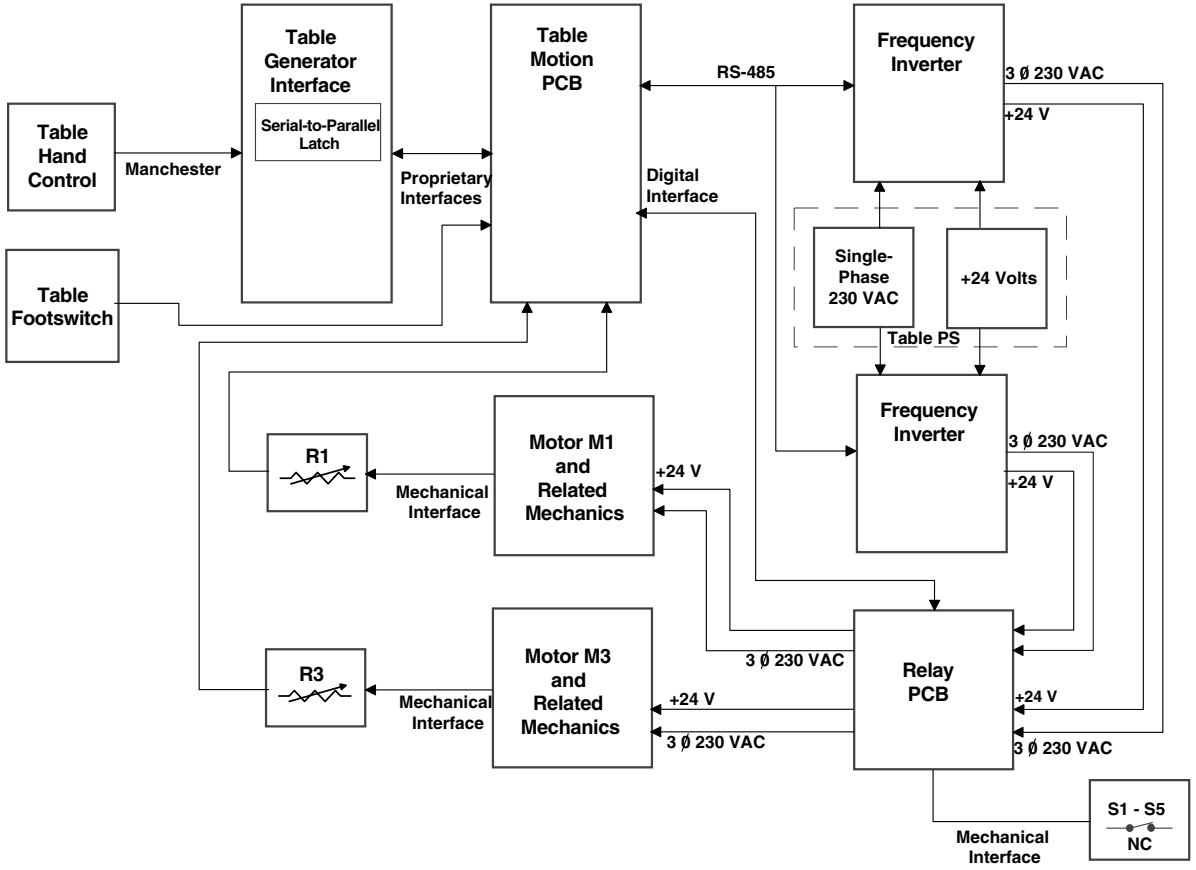


Table Vertical Movement and Tilt Circuitry

Use the Table Hand Control or Table Footswitch to tilt the Table top or move it vertically. There are no Table movement controls on the X-ray Control Console.

The Table Hand Control uses a Manchester serial encoder to transmit button closure data to the Table Generator Interface (TGI) PCB. The TGI has a Manchester decoder, which places the serial data in a serial-to parallel latch. The Table Motion PCB reads Table Hand Control data from this latch and generates whatever Table motions the Hand Control data specify.

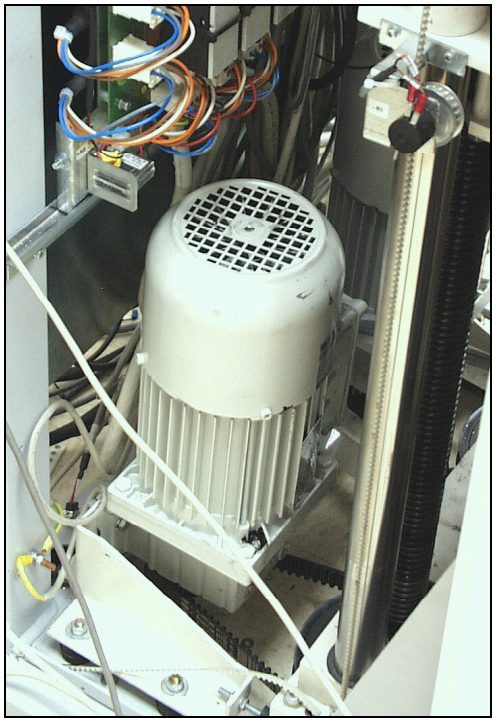
The Table Footswitch connects directly to the Table Motion CPU, which decodes and processes switch closure data.

The two Frequency Inverters shown in the block diagram convert single-phase 230 VAC from the Table Power Supply to three-phase 230 VAC. The Frequency Inverters modulate both the output frequency and duty cycle of each phase, enabling control of shaft rotation direction, speed, and torque on motors M1 and M3. The Frequency Inverters also control application of the +24 Volt braking signal, which is active when no motors are turning. The Table Motion PCB controls operation of the Frequency Inverters over the RS-485 serial line shown in the block diagram.

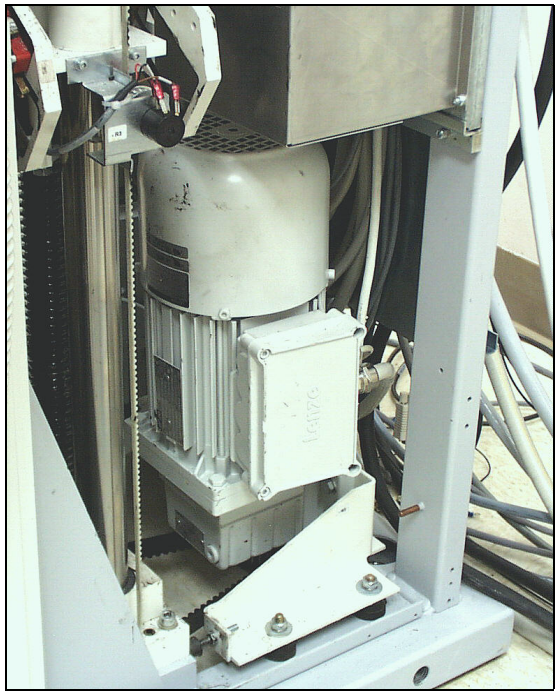
Control signals from the Table Motion PCB generate contact closures on the Relay Board that switch the three-phase, 230 VAC power or the +24-Volt braking signal to individual motors. The two drive motors that lift and tilt the Table are M3 and M1. M3 is on the right-hand side Table/Tower assembly as you face the Collimator Housing Control. M1 is on the left-hand side of the Table/Tower assembly as you face the Collimator Housing Control.

A large worm drive powered by M1 controls the elevation of one end of the Table Top and another worm drive powered by M3 controls the elevation of the opposite end of the Table. Together these two mechanisms can raise and lower the entire Table Top as a level surface, or they can tilt the Table Top at any inclination from +88° to -20°.

Two belt-driven, multi-turn, position potentiometers monitor the elevation of each end of the Table top and feed this information back to the Table Motion PCB. R1 monitors the end of the table moved by M1, and R3 monitors the end of the table moved by M3.



Motor M1 and Table Position Pot R1

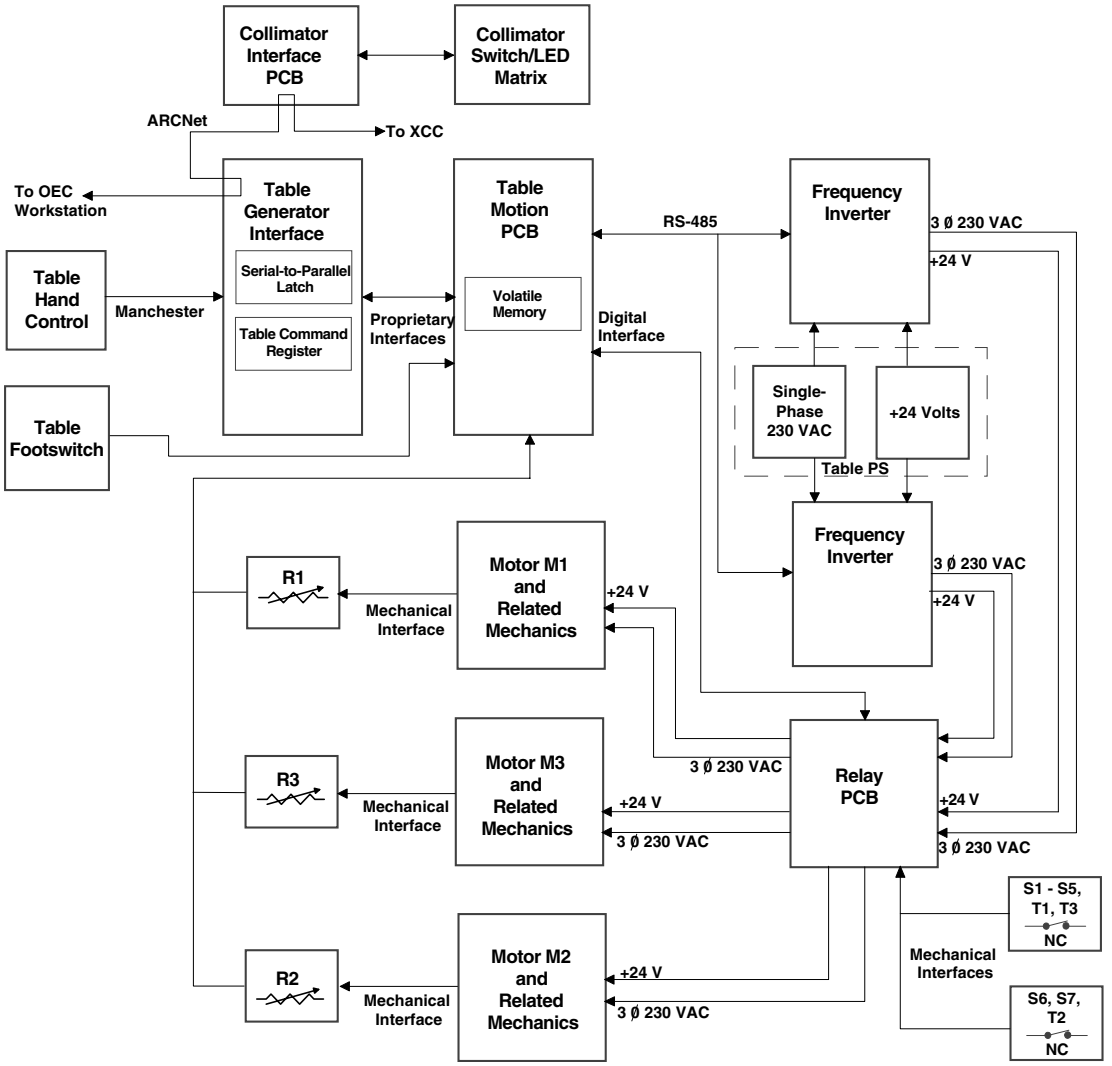


Motor M3 and Table Position Pot R3

S1 through S5 are normally closed limit switches that open when the Table raises, lowers, or tilts past calibrated limits. These switches wire in series with T1 and T3, which are thermal switches that protect motors M1 and M3, respectively. Any opening in this protective series loop immediately stops any movement of M1 or M3, and applies the brakes to both motors.

Table and X-ray Arm Position Memory

The Table Motion PCB has short-term volatile memory that allows it to store and recall position data for the Table top and X-ray Arm. You can store up to three Table Top/X-ray Arm positions from the Collimator Housing Control or Table Hand Control, and one position from the Table Footswitch. You can recall any position as long as you don't cycle power to the Table. The following illustration shows the circuitry involved in storing and recalling a Table Top/X-ray Arm position information.



Circuitry Associated With Short-Term Position Memory

The Collimator Interface PCB reads switch closures from and lights LEDs on the Collimator's Switch Matrix PCB. It encodes the switch closure data and places the data on the ARCNet, where an ISA processor on the TGI reads it and places it in the Table Command Register. The TGI transmits data from the Table Command Register to the Table Motion PCB when the Table Motion PCB requests the data.

The Table Hand Control uses a Manchester serial encoder to transmit button closure data to the Table Generator Interface (TGI) PCB. The TGI has a Manchester decoder, which places the serial Manchester data in a serial-to-parallel latch. The Table Motion PCB reads Hand Control data from this latch.

The Table Footswitch connects directly to the Table Motion CPU, and communicates with the Table Motion CPU using the vendor's proprietary interface.

When you save the current Table and X-ray Arm position data, the Table Motion PCB reads values from position pots R1, R2, and R3, performs analog-to-digital conversion of these values, and stores this position information in volatile memory.

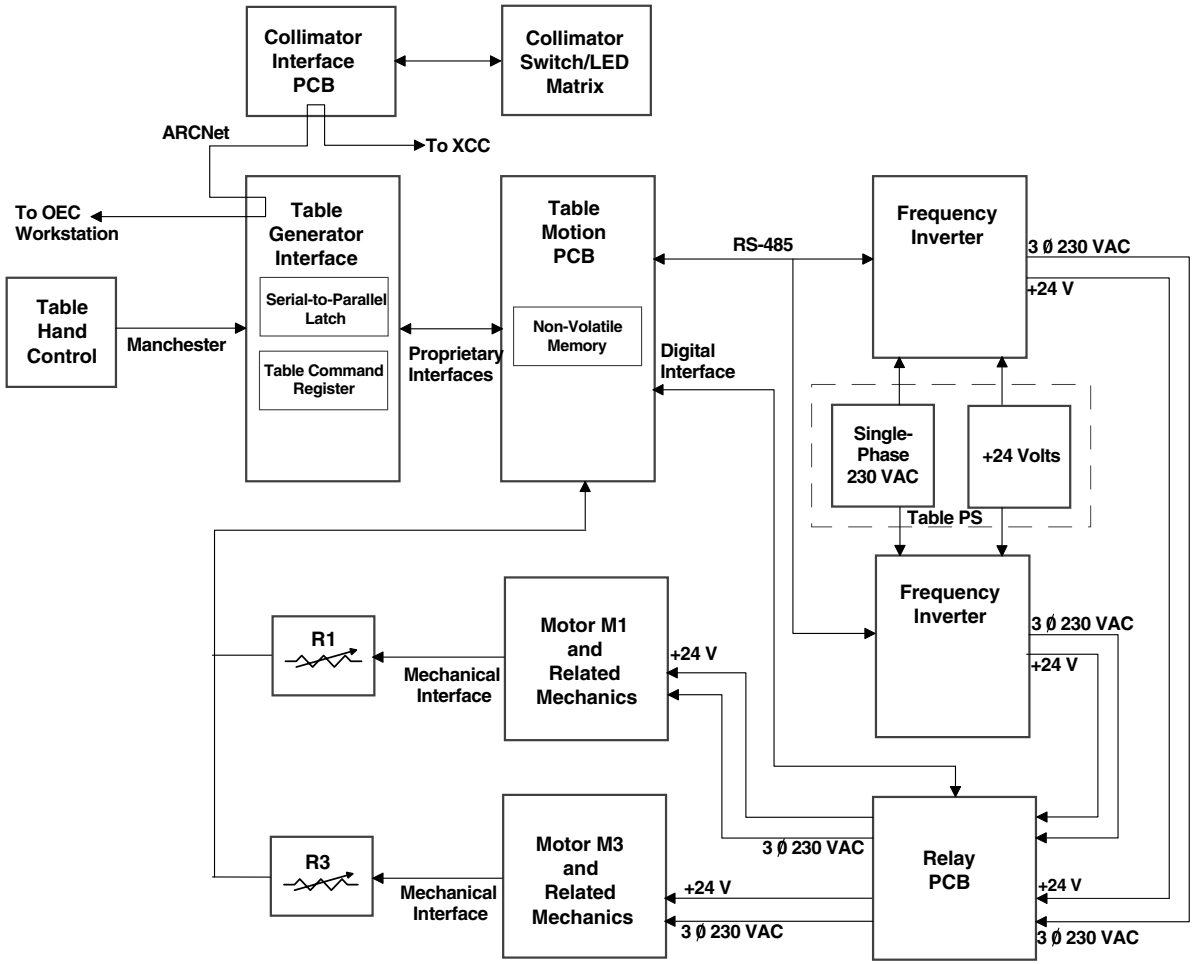
When you recall a saved Table Top/X-ray Arm position, the Table Motion PCB retrieves and processes stored position data. The Table Motion PCB drives the appropriate motors to position the Table Top and X-ray Arm, and monitors feedback from the position pots to determine when the Table Top and X-ray Arm are in position.

S1 through S5 are normally closed limit switches that open when the Table raises, lowers, or tilts past calibrated limits. These switches connect in series with T1 and T3, which are thermal switches that protect motors M1 and M3, respectively. Any opening in this protective series loop immediately stops any movement of M1 or M3, and applies the brakes to both motors.

Limit switches S7 and S6 wire in series with thermal switch T2. S7 and S6 are located along the same axis as R2. T2 is located in motor M2. These devices prevent longitudinal movement of the X-ray Arm when motor M2 overheats or when the X-ray Arm moves beyond its calibrated limits.

Table Top Load/Unload Position Memory

The Uroview 2800 Installation Procedure includes programming the Table to travel to its optimum patient loading/unloading height when the operator presses the Load/Unload button on the Table Hand Control or the Collimator Housing Control. “Optimum height” is somewhat subjective and will vary from installation to installation, although the Table loading position will always be level. The following block diagram shows the circuitry associated with this movement.



Circuitry Associated with Non-Volatile Position Memory

The Collimator Interface PCB reads switch closures from and lights LEDs on the Collimator's Switch Matrix PCB. It encodes the switch closure data and places the data on the ARCNet, where an ISA processor on the TGI reads it and places it in the Table Command Register. The TGI transmits data from the Table Command Register to the Table Motion PCB when the Table Motion PCB requests the data.

The Table Hand Control uses a Manchester serial encoder to transmit button closure data to the Table Generator Interface (TGI) PCB. The TGI has a Manchester decoder, which places the serial Manchester data in a serial-to-parallel latch. The Table Motion PCB reads Hand Control data from this latch.

When you press either Load/Unload button, the Table Motion PCB recalls the stored position data from non-volatile memory and processes the data. The Table motion PCB drives motors M1 and M3 to place the Table Top at the programmed height, and monitors feedback from potentiometers R1 and R3 to determine when the Table Top is at the Load/Unload position.

X-ray Arm Switch and Solenoid

X-ray Arm switch S15 is a normally-open SPST pushbutton that actuates DC solenoid Y7 using +24-Volt power from the Table Motion PCB. Under normal conditions, the solenoid is not energized, and spring pressure from an adjacent X-ray Arm locking pin holds the solenoid armature inside the solenoid body. The spring also normally holds the locking pin against the X-ray Arm, engaging one of the two Support Arm locking holes if one is in the vicinity. When the solenoid is energized, the armature extends downward from the solenoid. This downward armature pressure operates the locking pin, pulling it downward also. This disengages the locking pin from any X-ray Arm locking hole it may have occupied, releasing the X-ray Arm and allowing it to move freely. This allows you to move the X-ray Tube by hand laterally toward or away from the Tower.

The X-ray Arm can move with the locking pin against it unless the locking pin engages either of the two locking holes in the Support Arm. One locking hole stops X-ray Arm movement when the X-ray tube is directly over the Image Intensifier in the “operate” position. The other locking hole stops X-ray Arm movement when the X-ray Tube is against the Tower in the “stow” position.

The following illustrations show the X-ray Arm Switch and Solenoid Y7 with the spring-operated Locking Pin visible next to it.

Support Arm Switch S15

Solenoid Y7 with Locking Pin

Functional Tests

The following paragraphs describe how to test each Table movement for proper operation.

Table Top Lateral Movement

Lateral movement of the Table is side-to-side motion of the Table top toward or away from the Tower. You can invoke lateral movement from the Table Hand Control, Collimator Housing Control, or Table Footswitch. Use any of these controls to check for proper lateral Table movement as follows:

1. Press right-hand lateral movement button or step on right-hand lateral movement corner of Footswitch pedal.
2. Verify that Table top moves smoothly and quietly to patient's right.
3. Verify that each VFD correctly reports current Table position.
4. Verify that table pauses briefly when it reaches center of lateral travel.
5. Verify that Table top stops immediately when you release button or pedal.
6. Press left-hand lateral movement button or step on left-hand lateral movement corner of Footswitch pedal.
7. Verify that Table top moves smoothly and quietly to patient's left.
8. Verify that table pauses briefly when it reaches center of lateral travel.
9. Verify that each VFD correctly reports current Table position.
10. Verify that Table top stops immediately when you release button or pedal.

Refer to Fault Isolation tables later in this chapter to troubleshoot any problems you encounter with Table top lateral movement.

Table Top Longitudinal Movement

Longitudinal movement of the Table is head-to-foot or foot-to-head motion of the Table top. You can invoke longitudinal movement from the Table Hand Control, Collimator Housing Control, or Table Footswitch. Use any of these controls to check for proper longitudinal Table movement as follows:

1. Press head end longitudinal movement button or step on head-end longitudinal movement corner of Footswitch pedal.
2. Verify that Table top moves toward head end of Table.
3. Verify that each VFD correctly reports Table position
4. Verify that Table top stops immediately when you release button or pedal.
5. Press foot end longitudinal movement button or step on foot-end longitudinal movement corner of Footswitch pedal.
6. Verify that Table top moves to foot end of Table.
7. Verify that each VFD correctly reports Table position.
8. Verify that Table top stops immediately when you release button or pedal.

Use the Fault Isolation table later in this chapter to troubleshoot any problems you encounter with Table top longitudinal movement.

X-ray Arm Longitudinal Movement

Longitudinal movement of the X-ray Arm is motion of the entire Image Chain (X-ray Tube, Collimator, Image Intensifier, and CCD Camera) from head-to-foot or from foot-to-head while the Table itself remains stationary. You can invoke longitudinal movement of the X-ray Arm from the Table Hand Control, Collimator Housing Control, or Table Footswitch. Use any of these controls to perform the following test.

1. Press the X-ray Arm Left movement button or step on the equivalent Table Footswitch control.
2. Verify that the X-ray Arm immediately moves smoothly and quietly to the left.
3. Verify that the longitudinal movement of the X-ray Arm ceases when you release the button or Table Footswitch.
4. Press the X-ray Arm Right movement button or step on the equivalent Footswitch control.
5. Verify that the X-ray Arm moves to the right.
6. Verify that the longitudinal X-ray Arm movement ceases when you release the button or Table Footswitch.

Use the Fault Isolation table that appears later in this chapter to troubleshoot any problems you encounter with X-ray Arm longitudinal movement.

Film Cassette Longitudinal Movement

When you load the Film Cassette and select Film mode, the subsystem automatically moves the cassette from its loading position behind the cassette slot to a spot directly over the Image Intensifier, ready for exposure. Verify correct movement of the Film Cassette by taking a few film shots, and then making sure that the image is correctly centered in each developed X-ray film.

Use the Fault Isolation table that appears later in this chapter to troubleshoot any problems you encounter with Film Cassette movement.

Table Top and X-ray Arm Position Short-Term Memory

Table movement circuitry has short-term memory that can store and recall up to three different random Table/X-ray Arm positions. The memory is valid for each position until you power down the Subsystem.

Use the following method to test Table Position memory. Use the Table Memory buttons on the Hand Control or Collimator Housing control rather than the Table Footswitch pedal to conduct the test. The Hand Control and Collimator Housing control can store and recall three positions, compared to one for the Footswitch.

1. Move the Table to a random height and tilt, and place the X-ray Arm in a random horizontal position.
2. Press the Save button on the Hand Control.
3. Press one of the three Memory buttons to store the Table's current elevation and tilt, and the X-ray Arm’s current position. The LED next to the Memory button lights when you successfully store this information.
4. Move both the X-ray Arm and Table top to another position.
5. Press the Recall button.
6. Press the Memory button you used in step 3.
7. Verify that the Table top and X-ray Arm return to the position you stored in step 3.
8. Repeat steps 1 through 7 to store two more random Table/X-ray Arm positions in the Table's short-term memory.
9. Verify that you can recall all three stored Table/X-ray Arm positions.

Use the Fault Isolation table that appears later in this chapter to troubleshoot any problems you encounter with using Table Position Memory.

Table Elevation

You can move the Table top up or down using controls on the Table Hand Control or Table Footswitch. The Table travels from a minimum height of 78.5 cm (30.9 inches) to a maximum height of 122 cm (48 inches). Verify proper operation of Table Elevation function by using either the Table Hand Control or Table Footswitch, as follows:

1. Move Table to its maximum height. Table should move smoothly and quietly, and stop with its top at 122 cm above the floor (±.5 cm).
2. Move Table to its minimum height. Again, Table should move smoothly and quietly, and stop with its top at 78.5 cm above the floor (± .5 cm).

Use the Fault Isolation table that appears later in this chapter to troubleshoot any problems that occur when you try to raise or lower the Table top.

Patient Load/Unload Table Positioning

The Field Service Engineer programs the Table upon installation to automatically go to a specific patient load/unload height when you press the Load/Unload button on the Hand Control or Collimator Control Panel. Test this function as follows:

1. Use the Table Hand Control to move the Table/X-ray Arm to one of the Memory positions you stored earlier. If there are no pre-programmed positions to go to, just use the Hand Control to place the Table top at a random height and tilt.
2. Press the Patient Load/Unload button on the Table Hand Control.
3. Verify that the Table top moves to the correct Patient Load/Unload height. Measure the height of the Table top above the floor, and use a digital level to make sure the Table top is not tilted. Table top must be with half a centimeter of the programmed height, and within one degree of being level.
4. Place the Table top at another random position as described in step 1.
5. Press the Patient Load/Unload button on the Collimator Control panel.
6. Verify that the Table top moves to the correct Patient Load/Unload height. Measure the height of the Table top above the floor, and use a digital level to make sure the Table top is not tilted. Table top must be with half a centimeter of the programmed height, and within one degree of being level.

Use the Fault Isolation table below to troubleshoot any problems related to the Patient Load/Unload function.

Table Tilt

A normally functioning Uroview 2800 Table tilts a maximum of +88 degrees up from level and down a maximum of -20 degrees from level. Tilt buttons are available on the Hand Control and a Tilt pedal is available on the Table Footswitch. Use either of these controls to perform the following test, which evaluates the Table's Tilt function.

1. Tilt the Table upward until the Table reaches its positive tilt travel limit. The table should move smoothly and quietly to its maximum upward inclination. Use a digital level to measure the inclination, which should be within one degree of +88 degrees.
2. Tilt the Table downward until the Table reaches its negative tilt travel limit. Use a digital level to measure the inclination, which should be within a degree of -20 degrees.

If tilt movement is inaccurate or rough, use the Fault Isolation table to troubleshoot the problem.

X-ray Arm Lateral Movement

There are no motorized lateral movements associated with the X-ray Arm. Instead, the operator grasps the X-ray Arm handle, pushes the release switch, and manually positions the X-ray Arm laterally. A solenoid armature drives a locking pin to secure the X-ray Arm into one of two positions: stowed near the tower, or centered over the Image Intensifier and film cassette, ready to take X-rays. Test the X-ray Arm movement as follows:

1. Grasp the X-ray Arm handle and press the switch. You will hear the solenoid energize, unlocking the X-ray Arm.
2. Push the X-ray Arm gently away from you. If the X-ray Arm is already in the stowed position near the Tower, you won't be able to move it much. If the X-ray Arm is in the operate position, it will move toward the tower and stop when it reaches the stow position.
3. Release the X-ray Arm switch. Verify that the X-ray Arm locks in place in the stowed position.
4. Press and hold the X-ray Arm switch again. You will hear the solenoid energize, and the X-ray Arm again becomes movable.
5. Pull the X-ray Arm toward you and then release the switch. Verify that the X-ray Arm locks into place when the X-ray tube reaches the operate position over the Image Intensifier.

Fault Isolation

Use the following tables to troubleshoot problems with Table Motion. There is a separate table for each of the following functions:

- Table Top Lateral Movement
- Table Top Longitudinal Movement
- X-Ray Arm Longitudinal Movement
- Film Cassette Longitudinal Movement
- Table Top and X-ray Arm Short-Term Position Memory
- Table Top Elevation and Tilt
- Patient Load/Unload Table Top Positioning
- Support Arm Functions

Table Top Lateral Movement		
Problem	**Possible Cause**	**Corrective Action**
Lateral movement button on Table Hand Control does not work.	Damaged or Faulty Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Hand Control connector or wiring	Refer to Replacement chapter for access details. Inspect and replace if necessary
	Table Power Supply +40-Volt output faulty	Refer to Replacement chapter for access details. Check output with DVM. Replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Loose connector on Table Digital PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M6 faulty	Refer to Replacement chapter for access details. Inspect for loose connections or other problems. Replace if necessary.
	Limit switch S16, S17, and/or S18 closed or installed accessories are incompatible with lateral Table Top movement	Inspect. Correct any problems you see.
	Position feedback pot R6 faulty or damaged drive mechanism.	Inspect for damage or other fault.

Table Top Lateral Movement		
Problem	**Possible Cause**	**Corrective Action**
Lateral movement button on Collimator Housing Control does not work. .	Faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect Matrix PCB and replace if necessary.
	Faulty connectors or cabling	Inspect and replace if necessary.
	Collimator Interface PCB faulty	Refer to Replacement chapter for access details. Inspect for loose connectors or other problems and replace if necessary.
	Table Power Supply +40-Volt output faulty	Refer to Replacement chapter for access details. Check output with DVM. Replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Loose connector on Table Digital PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M6 faulty	Refer to Replacement chapter for access details. Inspect for loose connections or other problems. Replace if necessary.
	Limit switch S16, S17, and/or S18 is closed. Switch closure usually indicates that accessories incompatible with lateral Table Top lateral movement are installed.	Inspect. Correct any problems you see.
	Position feedback pot R6 faulty or damaged drive mechanism.	Inspect for damage or other fault. Replace broken parts.

Table Top Lateral Movement		
Problem	**Possible Cause**	**Corrective Action**
Lateral movement pedal on Table Footswitch does not work	Faulty Table Footswitch	Inspect. Substitute another Table Footswitch if possible. Use Control Test described in Diagnostics chapter to verify Table Footswitch operation. Replace Table Footswitch if necessary.
	Faulty Table Footswitch connectors or cabling	Inspect and replace if necessary.
	Table Power Supply +40-Volt output faulty	Refer to Replacement chapter for access details. Check output with DVM. Replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Loose connector or other problem on Table Digital PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M6 faulty	Refer to Replacement chapter for access details. Inspect for loose connections or other problems. Replace if necessary.
	S16, S17, and/or S18 closed or accessories incompatible with lateral movement are installed	Inspect. Correct any problems you see.
	Position feedback pot R6 faulty or damaged drive mechanism.	Inspect for damage or other fault. Replace broken parts.

Table Top Lateral Movement		
Problem	**Possible Cause**	**Corrective Action**
Table does not stop when you release lateral movement button on Table Hand Control.	Damaged or Faulty Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test described in Diagnostics chapter to test operation of Table Hand Control buttons.
	Faulty Hand Control connectors or wiring	Inspect and replace Hand Control if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Loose connector on or damage to Table Digital PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	S16, S17, and/or S18 closed or accessories incompatible with lateral movement are installed	Inspect. Correct any problems you see.
	Position feedback pot R6 faulty or damaged drive mechanism.	Inspect for damage or other fault. Replace if necessary.

Table Top Lateral Movement		
Problem	**Possible Cause**	**Corrective Action**
Table does not stop when you release lateral movement button on Collimator Housing Control	Faulty Collimator Switch/LED Matrix PCB	Inspect PCB and replace if necessary
	Faulty connectors or cabling	Inspect and replace if necessary
	Collimator Interface PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect PCB and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Loose connector or other problem on Table Digital PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	S16, S17, and/or S18 closed or installed accessories are incompatible with lateral movement	Inspect. Correct any deficiencies you see.
	Position feedback pot R6 faulty or has damaged drive mechanism	Inspect for damage or other fault. Replace broken parts.

Table Top Lateral Movement		
Problem	**Possible Cause**	**Corrective Action**
Table does not stop when you release lateral movement pedal on Table Footswitch.	Faulty Footswitch, Footswitch cable, or Footswitch connector	Inspect. Use a substitute Table Footswitch if possible. Use Control Test described in Diagnostics chapter to verify correct operation of Table Footswitch. Replace any damaged or inoperative components.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Loose connector or other problem on Table Digital PCB.	Refer to Replacement chapter for access details. Inspect and replace this PCB if necessary.
	Position feedback pot R6 faulty or has damaged drive mechanism	Inspect for damage or other fault. Replace any broken parts.
Lateral Table movement is rough or noisy	Drive mechanism needs lubrication	Perform lubrication of M6 drive mechanics as described in Preventive Maintenance procedure
	Drive mechanism is dirty	Inspect and correct any problems you see.
One or more VFDs fail to correctly report Table's lateral position.	No data signals to VFD from Collimator Interface PCB or X-ray Control Interface PCB.	Inspect and correct any problems you find
	No +5-Volt power from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find.
VFDs report incorrect Table lateral position.	Lateral axis calibration inaccurate	Follow instructions in Calibration chapter to re-calibrate lateral axis.

Table Top Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
Longitudinal movement button on Table Hand Control does not work.	Damaged or faulty Hand Control	Inspect, substitute another Hand Control if possible or use Control Test in Diagnostics chapter to check for faulty key on Hand Control
	Faulty Hand Control connectors or wiring	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Power Supply	Inspect single-phase 230 VAC source. Look for blown fuse (F2 for F3) or open line filter (Z2 or Z3).
	Faulty Frequency Inverter	Inspect and replace if necessary
	S8 open	Inspect. Recalibrate longitudinal axis if necessary.
	T4 open	Check motor M4 for overheating.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M4 faulty or drive belt broken	Refer to Replacement chapter for access details. Inspect for damage or loose connections
	Position pot R4 is faulty	Inspect and replace if necessary
Longitudinal movement button on Collimator Housing Control does not work.	Damaged or faulty Collimator Switch/LED Matrix PCB	Inspect, replace damaged or faulty PCB if necessary
	Faulty Collimator Interface PCB	Inspect and replace if necessary.

Table Top Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Power Supply	Inspect single-phase 230 VAC source. Look for blown fuse (F2 for F3) or open line filter (Z2 or Z3).
	Faulty Frequency Inverter	Inspect and replace if necessary
	S8 open	Inspect. Recalibrate longitudinal axis if necessary.
	T4 open	Check motor M4 for overheating.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Motor M4 faulty or drive belt broken	Refer to Replacement chapter for access details. Inspect for damage or loose connections
	Position pot R4 is faulty	Inspect and replace if necessary
Longitudinal movement pedal on Table Footswitch does not work	Damaged or faulty Table Footswitch	Inspect, substitute another Table Footswitch if possible or use Control Test in Diagnostics chapter to check for faulty pedal on Table Footswitch
	Faulty Table Footswitch connectors or wiring	Inspect and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Faulty Table Power Supply	Inspect single-phase 230 VAC source. Look for blown fuse (F2 for F3) or open line filter (Z2 or Z3).
	Faulty Frequency Inverter	Inspect and replace if necessary

Table Top Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
	S8 open	Inspect. Recalibrate longitudinal axis if necessary.
	T4 open	Check motor M4 for overheating.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M4 faulty or drive belt broken	Refer to Replacement chapter for access details. Inspect for damage or loose connections
	Position pot R4 or drive mechanism is faulty	Inspect and replace faulty parts if necessary
Table Top does not stop when you release longitudinal movement button on Table Hand Control.	Damaged or faulty Hand Control	Inspect, substitute another Hand Control if possible or use Control Test in Diagnostics chapter to check for faulty key on Hand Control
	Faulty Hand Control connectors or wiring	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Frequency Inverter	Inspect and replace if necessary
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Position pot R4 is faulty	Inspect and replace if necessary

Table Top Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
Table Top does not stop when you release longitudinal movement button on Collimator Housing Control.	Damaged or faulty Collimator Switch/LED Matrix PCB	Inspect, replace damaged or faulty PCB if necessary
	Faulty Collimator Interface PCB	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Power Supply	Inspect single-phase 230 VAC source. Look for blown fuse (F2 for F3) or open line filter (Z2 or Z3).
	Faulty Frequency Inverter	Inspect and replace if necessary
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Position pot R4 and/or drive mechanism is faulty	Inspect and replace parts if necessary
Table Top does not stop when you release longitudinal movement pedal on Table Footswitch	Damaged or faulty Table Footswitch	Inspect, substitute another Table Footswitch if possible or use Control Test in Diagnostics chapter to check for faulty pedal on Table Footswitch
	Faulty Table Footswitch connector or wiring	Inspect and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Faulty Frequency Inverter	Inspect and replace if necessary
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.

Table Top Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
	Position pot R4 or drive mechanism is faulty	Inspect and replace faulty parts if necessary
Longitudinal Table movement is rough or noisy	Drive mechanism is in need of lubrication	Lubricate drive mechanism in accordance with instructions in Preventive Maintenance procedure.
One or more VFDs fail to correctly report Table's longitudinal position.	No data signals to VFD from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find
	No +5-Volt power from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find
One or more VFDs incorrectly report Table's longitudinal position.	Longitudinal axis calibration inaccurate	Follow instructions in Calibration chapter to re-calibrate longitudinal axis.

X-ray Arm Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
X-ray Arm longitudinal movement button on Table Hand Control does not work	Table Hand Control faulty or damaged	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Table Hand Control connector or wiring	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connection. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Motor M2 or drive mechanics faulty	Refer to Replacement chapter for access details. Inspect and replace any broken parts.
	Limit switch S6 or S7 open	Inspect. Replace any damaged limit switch
	Thermal switch T2 open	Check motor M2 for overheating.
	Position pot R2 or drive mechanism for this pot is faulty	Inspect and replace if necessary.

X-ray Arm Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
X-ray Arm longitudinal movement button on Collimator Housing Control does not work	Damaged or faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary
	Faulty Collimator Interface PCB.	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connection. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are output by the power supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Motor M2 or drive mechanics faulty	Refer to Replacement chapter for access details. Inspect and replace any broken parts.
	Limit switch S6 or S7 open	Inspect. Replace any damaged limit switch
	Thermal switch T2 open	Check motor M2 for overheating.
	Position pot R2 or drive mechanism for this pot is faulty	Inspect and replace if necessary.

X-ray Arm Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
X-ray Arm longitudinal movement pedal on Table Footswitch does not work	Damaged or faulty Table Footswitch Assembly	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are output by the power supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Motor M2 or drive mechanics faulty	Refer to Replacement chapter for access details. Inspect and replace any broken parts.
	Limit switch S6 or S7 open	Inspect. Replace any damaged limit switch
	Thermal switch T2 open	Check motor M2 for overheating.
	Position pot R2 or drive mechanism for this pot is faulty	Inspect and replace if necessary.

X-ray Arm Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
X-ray Arm longitudinal movement does not cease when you release button on Table Hand Control.	Table Hand Control faulty or damaged	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Table Hand Control connector or wiring	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Motor M2 or drive mechanics faulty	Refer to Replacement chapter for access details. Inspect and replace any broken parts.
	Limit switch S6 or S7 open	Inspect. Replace any damaged limit switch
	Thermal switch T2 open	Check motor M2 for overheating.
	Position pot R2 or drive mechanism for this pot is faulty	Inspect and replace if necessary.

X-ray Arm Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
X-ray Arm longitudinal movement does not cease when you release button on Collimator Housing Control	Damaged or faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary
	Faulty Collimator Interface PCB.	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connection. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are output by the power supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Limit switch S6 or S7 open	Inspect. Replace any damaged limit switch
	Thermal switch T2 open	Check motor M2 for overheating.
	Position pot R2 or drive mechanism for this pot is faulty	Inspect and replace if necessary.

X-ray Arm Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
X-ray Arm longitudinal movement does not cease when you release pedal on Table Footswitch.	Damaged or faulty Table Footswitch Assembly	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace PCB if necessary.
	Limit switch S6 or S7 won't open	Inspect. Replace any damaged limit switch
	Position pot R2 or drive mechanism for this pot is faulty	Inspect and replace if necessary.
	X-ray Arm longitudinal axis out of calibration	Refer to Calibration chapter for procedure.
X-ray Arm longitudinal movement is noisy or rough	Drive mechanism needs lubrication	Lubricate drive mechanism in accordance with instructions in Preventive
	Drive mechanism is dirty	Inspect and clean as necessary

Film Cassette Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
Film cassette carrier won't move into position for film exposure when you press the Film button on the Collimator Housing Control	Film cassette not loaded into film cassette carrier	Load cassette
	Incompatible film cassette loaded into film cassette carrier.	Use compatible cassette. Compatible cassettes are listed in the Operator's Manual.
	Faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary
	Faulty Collimator Interface PCB	See Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Power Supply	Inspect for proper operation. Make sure both the 230 VAC and +24 VDC inputs are working
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M5, related mechanics, or drive belt faulty	Inspect, replace any broken parts.
	Motor M5 overheated	Inspect, replace if necessary.
	Position pot R5 or drive mechanism faulty	Inspect and replace parts if necessary.

Film Cassette Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
	One or more cassette-sensing microswitches (S1 through S5) faulty	Inspect and replace as necessary.
	Table Digital PCB faulty	Inspect, look for loose connectors or other problems. Repair/replace as necessary.
Film cassette carrier won't move into position for film exposure when you press the Film button on the X-ray Control Console	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Power Supply	Inspect for proper operation. Make sure both the 230 VAC and +24 VDC inputs are working
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M5, related mechanics, or drive belt faulty	Inspect, replace any broken parts.
	Motor M5 overheated	Inspect
	Position pot R5 or drive mechanism faulty	Inspect and replace parts if necessary.
Film cassette carrier won't move into position behind film slot when subsystem powers up.	Film cassette not loaded into film cassette carrier	Load cassette
	Incompatible film cassette loaded into film cassette carrier.	Use compatible cassette. Compatible cassettes are listed in the Operator's Manual.

Film Cassette Longitudinal Movement		
Problem	**Possible Cause**	**Corrective Action**
	Faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary
	Faulty Collimator Interface PCB	See Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Table Power Supply	Inspect for proper operation. Make sure both the 230 VAC and +24 VDC inputs are working
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB Faulty	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Motor M5, related mechanics, or drive belt faulty	Inspect, replace any broken parts.
	Motor M5 overheated	Inspect
	Position pot R5 or drive mechanism faulty	Inspect and replace parts if necessary.
	One or more cassette-sensing microswitches (S1 through S5) faulty	Inspect and replace as necessary.
	Table Digital PCB faulty	Inspect, look for loose connectors or other problems. Repair/replace as necessary.

Table Top and X-ray Arm Short-Term Position Memory		
Problem	**Possible Cause**	**Corrective Action**
Can't store Table Top/X-ray Arm position from Table Hand Control	Faulty or damaged Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter
	Faulty Hand Control connector or cable	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace if necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace if necessary
	Position pot R2 or mechanical interface faulty	Inspect and replace if necessary
Can't store Table Top/X-ray Arm position from Collimator Housing Control	Damaged or faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary
	Faulty Collimator Interface PCB	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace if necessary

Table Top and X-ray Arm Short-Term Position Memory		
Problem	**Possible Cause**	**Corrective Action**
	Position pot R3 or mechanical interface faulty	Inspect and replace if necessary
	Position pot R2 or mechanical interface faulty	Inspect and replace if necessary
Can't store Table Top/X-ray Arm position from Table Footswitch.	Damaged or faulty Table Footswitch Assembly	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Faulty Table Footswitch connector or cable	Inspect and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace if necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace if necessary
	Position pot R2 or mechanical interface faulty	Inspect and replace if necessary
Can't recall Table Top/X-ray Arm position from Table Hand Control	Damaged or faulty Table Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Table Hand Control connector or cable	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors

Table Top and X-ray Arm Short-Term Position Memory		
Problem	**Possible Cause**	**Corrective Action**
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Table Power Supply Bad	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB bad	Refer to Replacement chapter for access details.
	Limit switch open	Look for open S1 – S5 or S7. Replace faulty limit switch or recalibrate movement as necessary.
	Motor M1, M3, or M2 hot	T1 open means M1 is hot T3 open means M3 is hot T2 open means M2 is hot Check related mechanics for free movement and clean or lubricate as necessary. Replace a motor that chronically overheats
	Motor M1, M3, or M2 has failed	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Check and repair or replace as necessary
	Position pot R3 or mechanical interface faulty	Check and repair or replace as necessary.
	Position pot R2 or mechanical interface faulty	Check and repair or replace as necessary.

Table Top and X-ray Arm Short-Term Position Memory		
Problem	**Possible Cause**	**Corrective Action**
Can't recall Table Top/X-ray Arm position from Collimator Housing Control	Damaged or faulty Collimator Switch/LED Matrix PCB	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary.
	Faulty Collimator Interface PCB	Inspect and replace if necessary.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Table Power Supply Bad	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB bad	Refer to Replacement chapter for access details.
	Limit switch open	Look for open S1 – S5 or S7. Replace faulty limit switch or recalibrate movement as necessary.
	Motor M1, M3, or M2 hot	T1 open means M1 is hot T3 open means M3 is hot T2 open means M2 is hot Check related mechanics for free movement and clean or lubricate as necessary. Replace a motor that chronically overheats
	Motor M1, M3, or M2 has failed	Inspect and replace as necessary.

Table Top and X-ray Arm Short-Term Position Memory		
Problem	**Possible Cause**	**Corrective Action**
	Position pot R1 or mechanical interface faulty	Check and repair or replace as necessary
	Position pot R3 or mechanical interface faulty	Check and repair or replace as necessary.
	Position pot R2 or mechanical interface faulty	Check and repair or replace as necessary.
Can't recall Table Top/X-ray Arm position from Table Footswitch.	Damaged or faulty Table Footswitch Assembly	Refer to Replacement chapter for access details. Inspect for damage and replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Table Power Supply Bad	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Relay PCB bad	Refer to Replacement chapter for access details.
	Limit switch open	Look for open S1 – S5 or S7. Replace faulty limit switch or recalibrate movement as necessary.
	Motor M1, M3, or M2 hot	T1 open means M1 is hot T3 open means M3 is hot T2 open means M2 is hot Check related mechanics for free movement and clean or lubricate as necessary. Replace a motor that chronically overheats
	Motor M1, M3, or M2 has failed	Inspect and replace as necessary.

Table Top and X-ray Arm Short-Term Position Memory		
Problem	**Possible Cause**	**Corrective Action**
	Position pot R1 or mechanical interface faulty	Check and repair or replace as necessary
	Position pot R3 or mechanical interface faulty	Check and repair or replace as necessary.
	Position pot R2 or mechanical interface faulty	Check and repair or replace as necessary.
Recalled Table Top/X-ray Arm position doesn't match stored position.	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connections. Replace if necessary.
	Vertical and/or Tilt axis calibration needed	Perform calibration as described in Calibration chapter
VFD doesn't correctly report Table Top/X-ray Arm position.	No data signals or corrupt data signals from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find.
	No +5-Volt power from Collimator Interface PCB or X-ray Control Interface	Inspect and correct any problems you find.

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
Can't raise Table Top using Table Hand Control	Damaged or faulty Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Hand Control connector or cable.	Inspect and replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary
Can't raise Table Top using Table Footswitch	Damaged or faulty Table Footswitch	Inspect, substitute another Table Footswitch if possible
	Faulty Table Footswitch connector or cable.	Inspect and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
Can't lower Table Top using Table Hand Control	Damaged or faulty Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Hand Control connector or cable.	Inspect and replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
Can't lower Table Top using Table Footswitch	Damaged or faulty Table Footswitch	Inspect, substitute another Table Footswitch if possible
	Faulty Table Footswitch connector or cable faulty.	Inspect and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
Can't positively tilt Table Top using Table Hand Control	Damaged or faulty Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Hand Control connector or cable.	Inspect and replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary
Can't positively tilt Table Top using Table Footswitch	Damaged or faulty Table Footswitch	Inspect, substitute another Table Footswitch if possible
	Faulty Table Footswitch connector or cable.	Inspect and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
Can't negatively tilt Table Top using Table Hand Control	Damaged or faulty Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button on Hand Control
	Faulty Hand Control connector or cable.	Inspect and replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
Can't negatively tilt Table Top using Table Footswitch	Damaged or faulty Table Footswitch	Inspect, substitute another Table Footswitch if possible
	Faulty Table Footswitch connector or cable.	Inspect and replace if necessary
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damaged or loose connections. Replace if necessary.
	Table Power Supply faulty	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply
	Faulty Frequency Inverter	Inspect and replace if necessary.
	Limit Switch open (S1 through S5)	Replace faulty limit switch or recalibrate movement as necessary.
	Drive motor overheated	T1 open means M1 is too hot T3 open means M3 is too hot
	Relay PCB faulty	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 or M3 faulty or related drive belt broken	Inspect and replace as necessary.
	Position pot R1 or mechanical interface faulty	Inspect and replace as necessary
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Table Top Elevation and Tilt		
Problem	**Possible Cause**	**Corrective Action**
VFDs do not correctly report current Table elevation	No data signals or corrupt data signals from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find
	No +5-Volt power from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find
VFDs do not correctly report current Table inclination	No data signals or corrupt data signals from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find
	No +5-Volt power from Collimator Interface PCB or X-ray Control Interface PCB	Inspect and correct any problems you find
Inclining Table Top or changing elevation of Table Top is noisy or rough.	M1 and/or M3 drive mechanics need lubrication	Inspect and lubricate in accordance with instructions in Preventive Maintenance procedure.
	M1 and/or M3 drive mechanics are encumbered by debris	Inspect and clean as necessary.

Patient Load/Unload Table Top Positioning		
Problem	**Possible Cause**	**Correction Action**
Table Top does not move to Patient Load/Unload position when you press button on Table Hand Control.	A Load/Unload position has not been programmed into Table's non-volatile memory.	Refer to Installation Procedure for programming instructions.
	Faulty or damaged Table Hand Control	Inspect, substitute another Hand Control if possible. Use Control Test in Diagnostics chapter to identify faulty button.
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Faulty Table Power Supply	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Relay PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 and/or M3 failed, or there is a problem with the drive mechanics	Inspect and replace any faulty components you discover.
	Position pot R1 or mechanical interface faulty.	Inspect and replace as necessary.
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Patient Load/Unload Table Top Positioning		
Problem	**Possible Cause**	**Correction Action**
Table Top does not move to Patient Load/Unload position when you press button on Collimator Housing Control	A Load/Unload position has not been programmed into Table's non-volatile memory.	Refer to Installation Procedure for programming instructions.
	Faulty Collimator Switch Matrix PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Collimator Interface PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary
	Faulty Table Generator Interface PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect for damage or loose connectors. Replace if necessary.
	Faulty Table Power Supply	Use DVM to ensure that both 230 VAC and +24 VDC are being output by the Table Power Supply.
	Faulty Frequency Inverter	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Faulty Relay PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.
	Motor M1 and/or M3 failed, or there is a problem with the drive mechanics	Inspect and replace any faulty components you discover.
	Position pot R1 or mechanical interface faulty.	Inspect and replace as necessary.
	Position pot R3 or mechanical interface faulty	Inspect and replace as necessary

Patient Load/Unload Table Top Positioning		
Problem	**Possible Cause**	**Correction Action**
Table Top moves to incorrect Patient Load/Unload position.	Non-volatile memory corrupted	Reprogram Table in accordance with instructions in Installation Procedure.
	Faulty Table Motion PCB	Refer to Replacement chapter for access details. Inspect and replace if necessary.

Support Arm Functions		
Problem	**Possible Cause**	**Corrective Action**
Support Arm switch S15 does not energize solenoid Y7.	Faulty switch	Disconnect switch and check switch for proper operation. Follow instructions in Replacement chapter to replace faulty switch
	Table Motion PCB not supplying +24 Volts.	Check with DVM
	Solenoid winding open	Check with DVM
Support Arm locking pin does not move when solenoid Y7 is energized.	Faulty linkage between solenoid and locking pin	Inspect
Support Arm locking pin does not secure X-ray Arm in position.	Return spring for locking pin broken or jammed	Inspect
	X-ray Arm not in stow or operate position	Inspect

Adjustments

Refer to Calibration chapter for information on how to calibrate vertical, tilt, longitudinal, and lateral Table motions, and to calibrate the Patient load position.

Miscellaneous

Not applicable